

WILDLIFE HARVEST AND POPULATION STATUS REPORT

WILD TURKEY - 2007

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2006 Fall firearms turkey season

The fall 2006 harvest was 11,927 birds (Table 1) with approximately 50% of the harvest composed of juveniles. This harvest was a 10.4% decrease compared to last year. Permit sales to residents were 23,141, a 10% decrease from last year. Nonresident permit sales were similar to last year. Historically, participation in the fall turkey season was tied to summer poult production; e.g., when production was up, permit sales increased. Permit sales may have decreased slightly as a result of free landowner permits. Also, the fact that youth deer and fall turkey seasons overlapped probably reduced harvest during the last weekend of fall turkey season.

2007 Spring turkey season

The 2007 spring turkey season harvest fell below the 50,000 mark for the first time since 1998. The 2007 (including the 2-day youth season) spring harvest was 48,472 birds, down 11%

from the 2006 harvest (Table 2). It appears the 1.2 poult to hen ratio recorded for 2005 was accurate and this poor hatch was reflected in a smaller number of 2 year-old birds available for harvest during 2007. Additionally we had a week-long period of below normal temperatures and this weather event may have changed the breeding chronology for turkeys. I received comments from across the state from hunters that had experienced difficult hunting conditions. One reason for the tough conditions may have been due to the lack of 2 year-old birds. I suspect most hens were laying but not yet incubating eggs when the cold weather occurred. We do not yet know the impact of temperatures (temps were 17° F during some evenings in Boone County) on nesting and egg survival but published reports indicated that goose eggs will freeze and die at these temperatures. Turkey eggs are typically covered and on-the-ground so may be able to withstand colder temperatures. Juveniles comprised 22% of the 2007 harvest reflecting the below average hatch in 2006.

Total permit sales for spring turkey hunting were 115,897. Overall 161,723 permits were distributed including 45,826 landowner permits. Previously we did not require landowners to purchase or obtain a permit and therefore landowner numbers were unknown. During spring of 2007 about 10% of landowners also purchased a statewide spring turkey permit. Therefore our estimated number of turkey hunters (including landowners) is 157,000 (Table 2). The number of nonresident turkey hunting permits issued was 8,988, a decrease from 10,158 that were sold in 2006. Nonresident spring turkey permit prices were increased from \$145 to \$175 in 2007 and this likely resulted in fewer permits sold..

Top harvest counties in 2007 were Franklin, with 880 turkeys checked, Texas with 791 and Callaway with 734. Regional harvest totals were: central, 6,904; northeast, 6,612; northwest,

6,602, southwest, 6,163; Kansas City, 5,654; Ozark, 5,470; southeast, 4,121; and St. Louis, 3,423.

2007 Brood survey

The 2007 statewide poult to hen ratio was 1.0 poult per hen (Figure 1). This ratio is less than half of the 47-year average of 2.4 poult per hen and well below the previous 10-year average of 1.9 poult per hen (Figure 2). I have received numerous inquiries from the public and agency personnel regarding the lack of poult observed this summer. Our brood survey cooperator data have strengthened the speculations of a poor hatch and suggest most successful broods were very late hatches or re-nests. The 1.0 poult to hen ratio recorded this year is the 2nd lowest recorded. The lowest ratio occurred in 1961 and was 0.8 poult per hen; in 2005 we recorded 1.2 poult per hen.

Variation among turkey production regions was evident in the 2007 poult to hen ratios (Figure 1) with better production in the eastern Ozarks likely resulting from the abundance of mast during 2006. Brood survey cooperators observed 13,959 gobblers and 20,649 hens during the 3 months; the sex ratio was 1.5 hens per gobbler.

Population status

Since 1983, volunteer archers have recorded the number of wild turkeys, deer, and furbearers seen while bowhunting during October and November. On a statewide basis, the number of wild turkey sightings per 1,000 hours of bowhunting in 2006 was 542. This number is slightly above the previous 15-year average (511). We had good mast crop in south Missouri during fall of 2006 but mast was not abundant in our northern counties. Mast likely effects turkey use of open areas and movements rates and so impacts sighting rates by archers.

Spring turkey harvest, age structure in the spring harvest, population indices, hunter success, and hunter opinions and attitudes provide the information needed to determine whether the quality of spring turkey hunting is being impacted. These variables are being monitored closely.

Restoration

During winter 2006-07 we released about 100 birds in the Bootheel Region of Missouri in an attempt to increase local populations.

Regulation changes

Our Conservation Commission approved an opening day formula change for the spring turkey season in 2007. Previously the opening day of spring turkey season was the Monday closest to 21 April. The new opening date formula is the 3rd Monday in April. The formula change was an attempt to balance hunter desires with the biology of turkey reproduction. The 3rd Monday formula resulted in our 2007 season opening earlier than any modern day season. Overall though the minor formula change will give us an earlier season opener during 8 years and a similar opening date as the previous formula during 12 of the next 20 years. Youth season will open earlier during 7 of the next 20 years. During 2 of the next 20 years the opening date of the youth season will occur on 31 March in order to avoid conflict with Easter. Our earlier opener did allow us to show our responsiveness to hunters and seemed to be favored by hunters, although the odd weather this past spring resulted in some complaints about the season being too early.

Post spring season survey results - 2006

Our 2007 post-season survey suggested hunter attitudes and practices have not dramatically changed and are in line with our evaluative criteria. Most hunters hunt private lands (74%) and have no or very little problem with interference (84%); our no interference goal is >65% of hunters reporting no or very little interference. Most (67%) hunters are satisfied with the current spring regulations, and 47% rated their past season as good or excellent, (our season satisfaction goal is 33% of hunters rating their season as good or excellent). Recent below average hatches, and/or late season openers, have resulted in an increased portion of hunters rating their spring season as poor (Figure 3).

Gobbling activity is considered one of the most important factors impacting spring turkey hunt quality. Gobbling is dependent on weather, bird densities, age structure, and other factors; however, this can vary day-to-day and by location. We are attempting to monitor changes in hunters' perceptions of gobbling activity through our post season survey. In 2007, (2006 in parenthesis), 28% (30%) of hunters rated gobbling activity as good or excellent, 32% (32%) as fair, and 38% (37%) as poor. About 22% (23%) of hunters believed that gobbling activity, compared to the past 3 years, has remained constant while 9% (7 %) believe it has increased and 54% (53%) believe it has decreased. More respondents reported decreased gobbling activity in 2007 and this again is likely related to recent poor hatches and later opening dates. We will continue to monitor hunter perceptions of gobbling activity and how they relate to our gobbling study.

Hunter recruitment and retention

We recently completed an evaluation of Missouri turkey hunter recruitment and retention rates by following youth and adult turkey hunting cohorts from 1998 - 2006. The number of youths participating in the spring turkey season has increased every year up to 2004 (Figure 4) and appears to have leveled at around 19,000. From 1996 to 2004, the number of participants more than doubled. The greatest increase in the number of participants occurred in 2001 when a special season was created for youth hunters. During 2001, 4,544 new youth hunters purchased tags. Our analysis further indicated that more youths participated in 2001 and beyond than did before 2001. Youth permit sales this past spring were 19,284 prior to the end of spring turkey season.

Overall retention numbers of youth turkey hunters seem to decline by about 20% per year (Figure 5). That is, about 80% of youths hunted at least one additional year; of those that participated at least once about 80% participated twice and so on. About 14% of the 1997 youth cohort participated in every season for the period from 1998-2006. About 40% of the 1998 youth cohort participated in the 2006 season.

The number of youth hunters participating in each subsequent year tends to decline about 10-20% per year (Figure 5). That is, about 80-90% of youths who purchase a permit, hunt the following year. Thus, retention from year to year is fairly high for youth turkey hunters.

Retention rates of adult spring turkey hunters are slightly higher than those for youth hunters (Figure 6). Overall about 90% of adult hunters will hunt the subsequent year for which they purchased a permit. During 2006, 55% of the 1998 adult cohort purchased a permit. About 25% of adult hunters participated in all seasons during the study period.

Turkey gobbling study

We recruited 729 volunteers from around the state to participate in a 5-year study designed to record gobbling chronology and weather factors that may affect gobbling rates. Study participants listened and counted gobbles for 20 minutes at least 2 times per week from 15 March to 17 May 2007. Listening periods started 45 minutes prior to sunrise and lasted for 20 minutes. During each listening session volunteers recorded the number of gobbles and individual gobblers they could hear as well as specific weather conditions. We set weather parameters to help volunteers decide on the best listening days. Data were input by volunteers to a link on MDC's website and were available to view by all participants. I am currently in the process of analyzing this past year's data. Some of the preliminary plots suggest that gobbling rates tended to peak around 15 April for all regions of the state during 2007 (Figures 7 and 8) and gobbling frequency was greater on private than on public lands (Figure 9). Weather variables that seemed to effect gobbling frequency were cloud cover (Figure 10), vapor pressure (Figure 11), and whether or not it rained the night before the listening date (Figure 12).

TABLE 1. Fall firearms turkey season harvest and permit sales, 1986-2006.

| Year | Fall Firearms Harvest | % Change From Previous Year | Fall Permit Sales | % Change From Previous Year |
|-------------------|------------------------------|------------------------------------|--------------------------|------------------------------------|
| 2006 | 11,927 | -10 | 23,141 | -10 |
| 2005 | 13,233 | +12 | 25,805 | +11 ^e |
| 2004 | 11,824 | +3 | 23,215 | -21 |
| 2003 | 11,436 | -20 | 28,108 | -10 |
| 2002 | 14,392 | +6 | 31,329 | +1.2 |
| 2001 | 13,596 | +3 | 30,949 | -3.2 |
| 2000 | 13,230 | -9.7 | 31,968 | -2.0 |
| 1999 | 14,651 | -4.5 | 32,606 | 0.0 |
| 1998 | 15,343 | +29.3 | 32,593 | -3.5 ^d |
| 1997 | 11,866 | -10.2 | 33,765 | -2.2 ^c |
| 1996 | 13,207 | -4.8 | 34,522 | +2.6 ^c |
| 1995 | 13,866 | -30.2 | 33,642 | -12.6 |
| 1994 | 19,869 | +46.4 | 38,424 | +11.8 |
| 1993 | 13,569 | -20.4 | 34,379 | -4.6 |
| 1992 | 17,061 | -13.8 | 36,033 | -3.8 |
| 1991 | 19,788 | +23.6 | 37,469 | +1.0 |
| 1990 ^b | 16,015 | -27.6 | 37,080 | -21.0 |
| 1989 | 22,131 | -4.1 | 46,946 | -7.4 |
| 1988 | 23,080 | -18.0 | 50,715 | -4.2 |
| 1987 | 28,139 | +33.9 | 52,922 | +13.4 |
| 1986 ^a | 21,019 | +72.6 | 46,688 | +28.9 |

^aBag limit was increased from 1 to 2 birds.

^bPermit fee increase.

^cNew permit types in 1996 and 1997 (all conservation and all hunting) that include fall firearms turkey hunting privileges make comparisons with other years less meaningful. Although permit sales went up in 1996 and 1997 when compared with 1995, a higher proportion of permit buyers (those buying the all conservation and all hunting permit types) did not hunt. These permit types were eliminated in 1998.

^dAll conservation and all hunting permit types eliminated.

^eIn 2005, fall turkey regulations were liberalized to allow hunters to take both fall birds on the same day and season length was increased to 31 days.

TABLE 2. Spring turkey season harvest and permit sales, 1985-2006.

| Year | Spring Harvest | % Change From Previous Year | Percent Success^b | Spring Permit Sales | % Change From Previous Year |
|-------------------|-----------------------|------------------------------------|------------------------------------|----------------------------|------------------------------------|
| 2007 | 48,472 | -11 | 29 | 115,897 ^g | +1.2 |
| 2006 | 54,712 | -5.2 | 31 | 114,529 ^g | -4.8 |
| 2005 | 57,743 | -5.2 | 35 | 120,215 | -3.5 |
| 2004 | 60,744 | +3.9 | 35 | 124,533 | - 4.2 |
| 2003 | 58,421 | +2.4 | 38 | 130,021 | +3.8 |
| 2002 | 57,034 | -1.3 | 39 | 125,157 | +6.3 |
| 2001 | 57,842 ^e | +1.7 | 37 | 117,736 ^f | +2.2 |
| 2000 ^a | 56,841 | +13.0 | 39 | 115,190 ^f | +3.8 |
| 1999 ^a | 50,299 | +3.8 | 37 | 110,939 ^f | +5.1 |
| 1998 ^a | 48,462 | +45.9 | 36 | 105,518 | +5.6 |
| 1997 | 33,216 | -12.4 | 27 | 99,933 | +0.1 |
| 1996 | 37,708 | +0.3 | 30 | 99,879 | +0.5 |
| 1995 | 37,472 | -1.2 | 31 | 99,412 | +8.8 |
| 1994 | 37,721 | +9.8 | 33 | 90,810 | 0.0 |
| 1993 | 34,354 | +4.0 | 30 | 89,899 | +0.1 |
| 1992 | 33,035 | +2.5 | 30 | 89,803 | +0.8 |
| 1991 | 32,237 | +7.3 | 29 | 89,077 | -3.3 |
| 1990 ^c | 30,056 | -15.6 | 27 | 92,093 | -0.9 |
| 1989 | 35,618 | +7.3 | 31 | 92,901 | -1.5 |
| 1988 | 33,187 | -7.7 | 29 | 94,301 | +10.0 |
| 1987 | 35,951 | +16.1 | 33 | 85,723 | +9.9 |
| 1986 | 30,965 | +25.0 | 31 | 77,972 | +10.3 |

^aThree week season, 2 bird bag limit with only 1 the first week and only 1 per day

^bPercent of permittees who hunted who killed at least 1 bird.

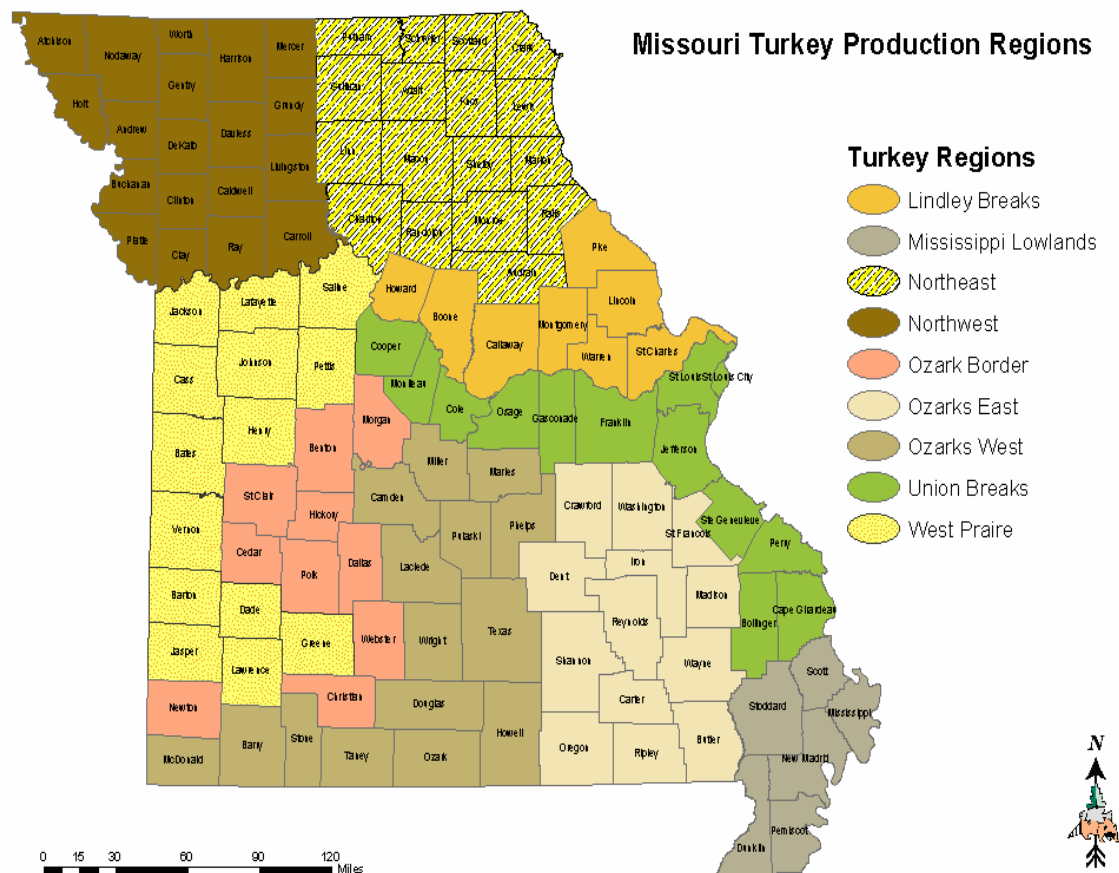
^cPermit fee increase.

^dTwo week season, 2 bird bag limit, 1 bird per week

^eIncludes 2 day Youth-only spring season

^fIncludes Youth Deer and Turkey hunting permits issued by end of spring turkey season

^gBeginning in 2006, permit totals include landowner permits for resident and nonresidents, we estimate that 10% of landowners also purchase a statewide permit, total permits distributed in 2007 were 157,000.



| | | | |
|----------------------|-----|--------------|-----|
| Lindley Breaks | 0.9 | Ozarks East | 1.2 |
| Mississippi Lowlands | 1.1 | Ozarks West | 1.3 |
| Northeast | 0.8 | Union Breaks | 0.9 |
| Northwest | 0.9 | West Prairie | 0.7 |
| Ozark Border | 1.1 | Statewide | 1.0 |

Sex ratio of adult birds observed was 1.5 hens per gobbler.

Figure 1. Poulth:hen ratios for Missouri turkey production regions for 2007.

Statewide poult to hen ratios (x10) in Missouri since 1960

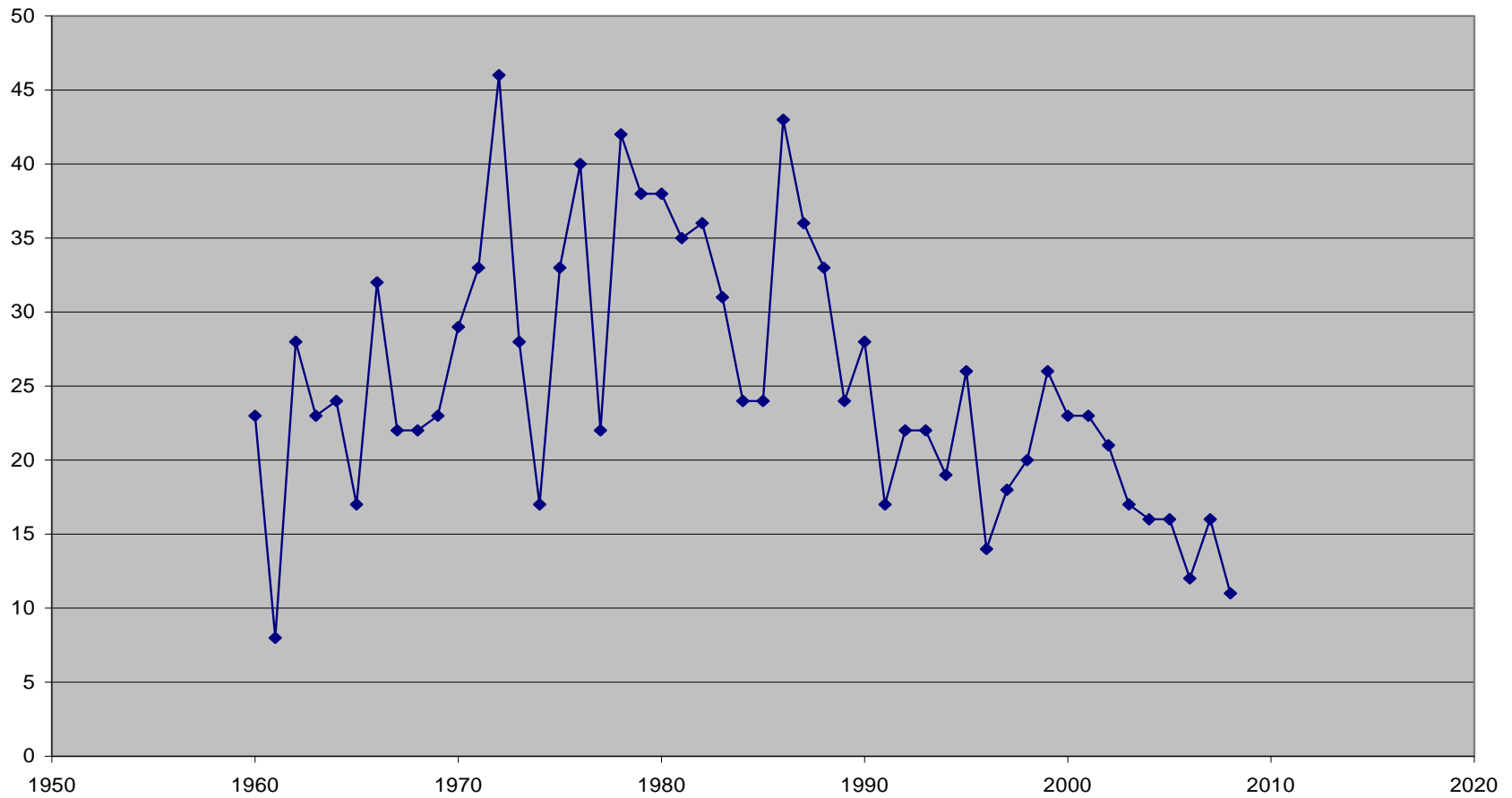


Figure 2. Statewide poult to hen ratios in Missouri from 1960 to present.

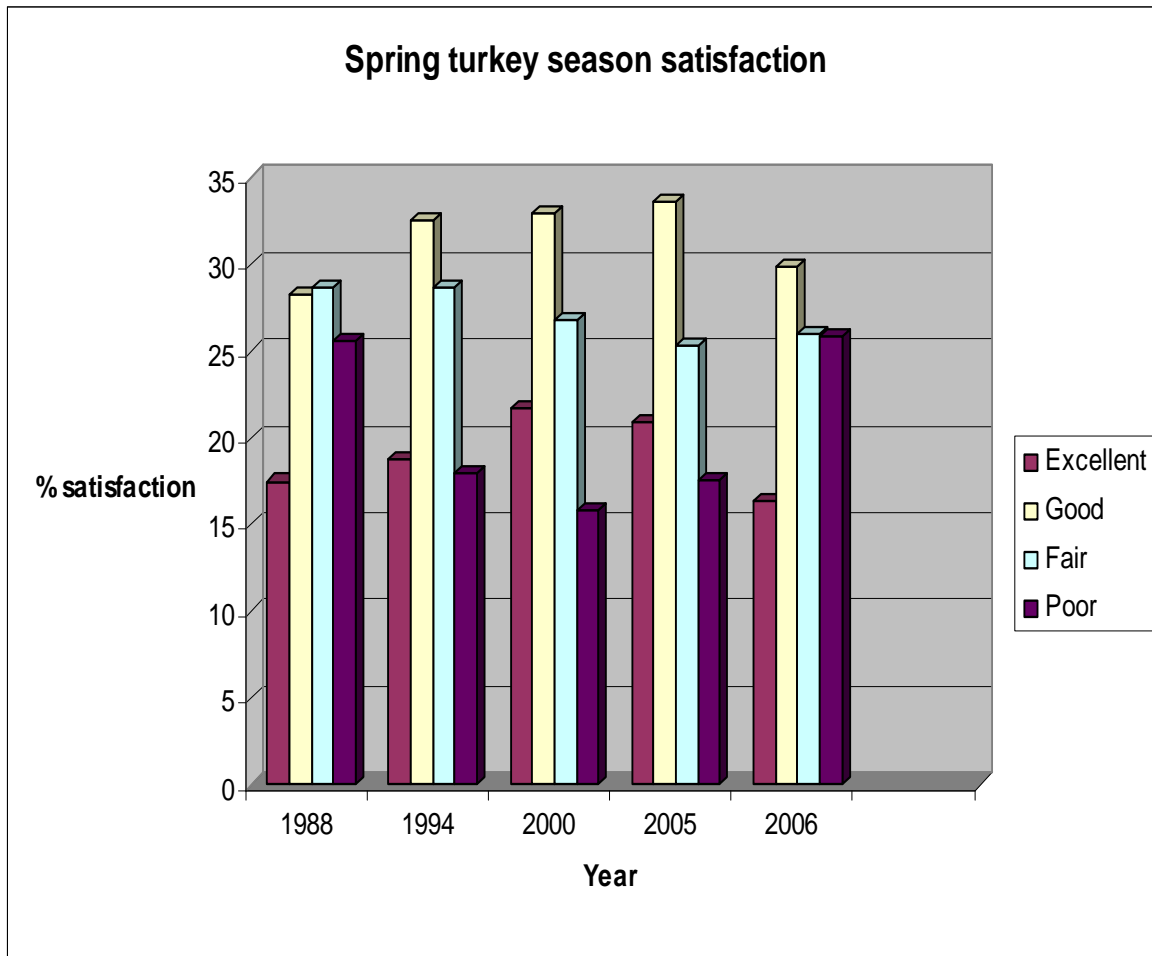


Figure 3. Hunter satisfaction ratings for the 2006 spring turkey season in Missouri based on post season hunter surveys from 1988, 1994, 2000, 2005, and 2006.

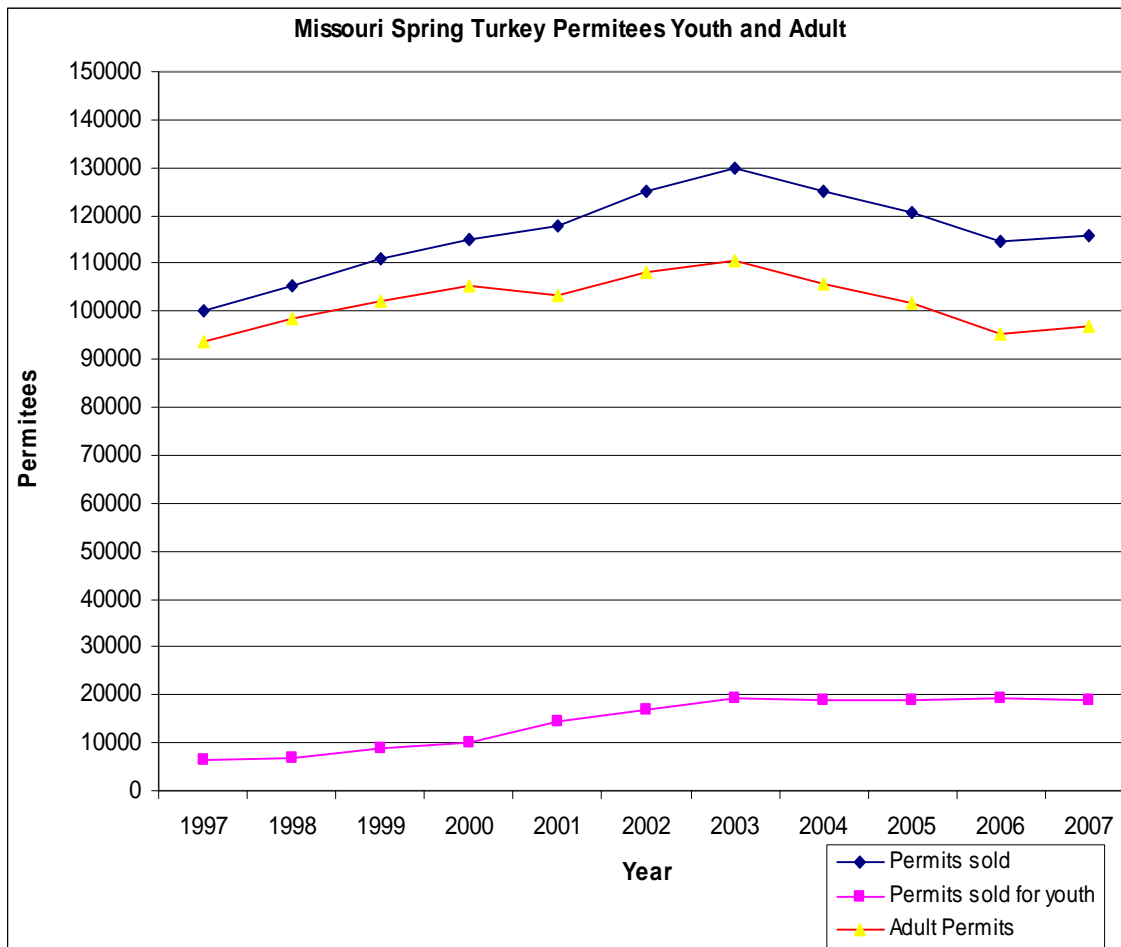


Figure 4. Permit sales to youth (≤ 15 yrs) and adult turkey hunters in Missouri from 1997-2007.

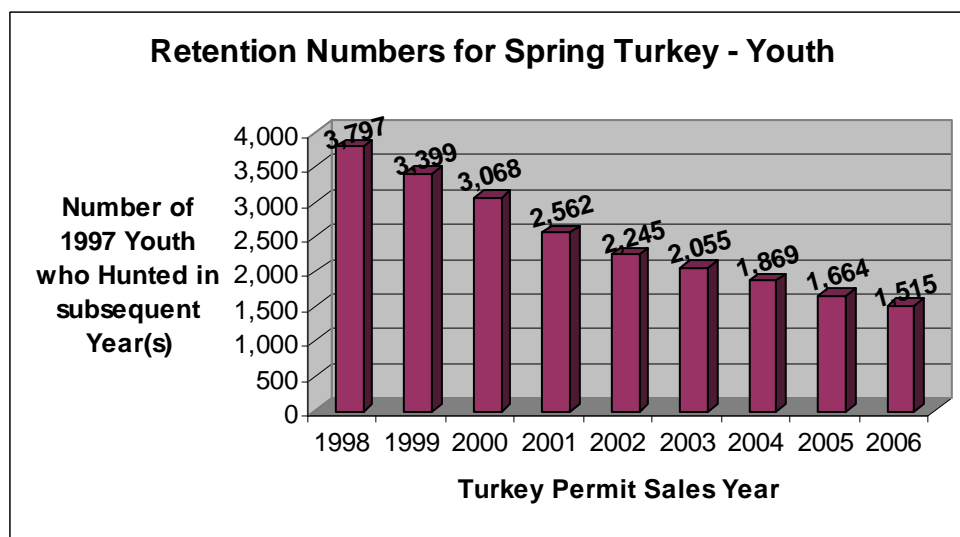
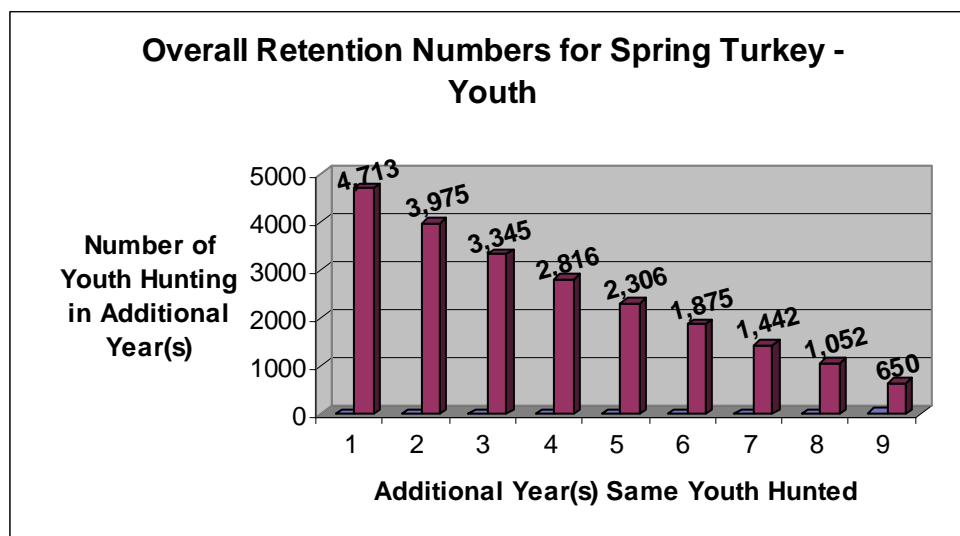
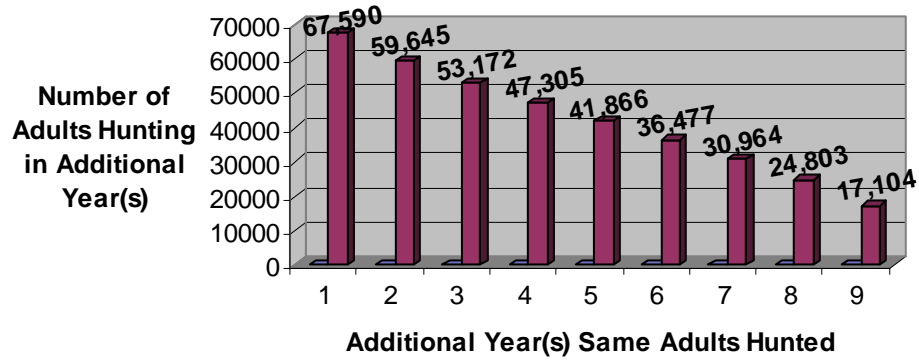


Figure 5. Retention numbers for youth (≤ 15 yrs) turkey hunters from 1997-2006

Overall Retention Numbers for Spring Turkey - Adult



Retention Numbers for Spring Turkey - Adults

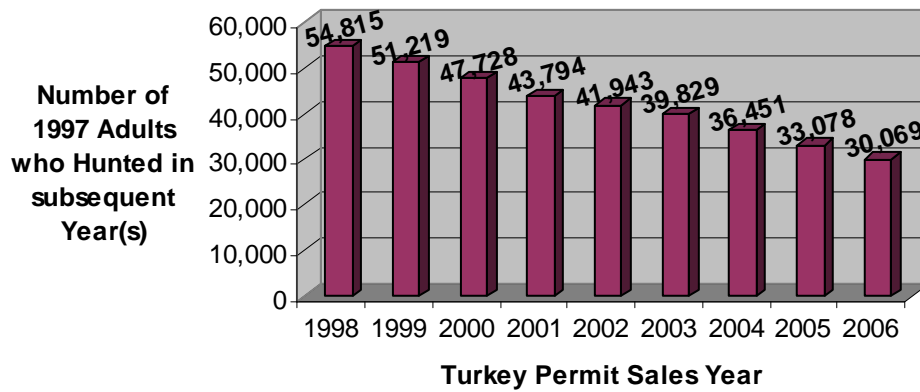


Figure 6. Retention numbers for adult spring turkey hunters from 1997 – 2006.

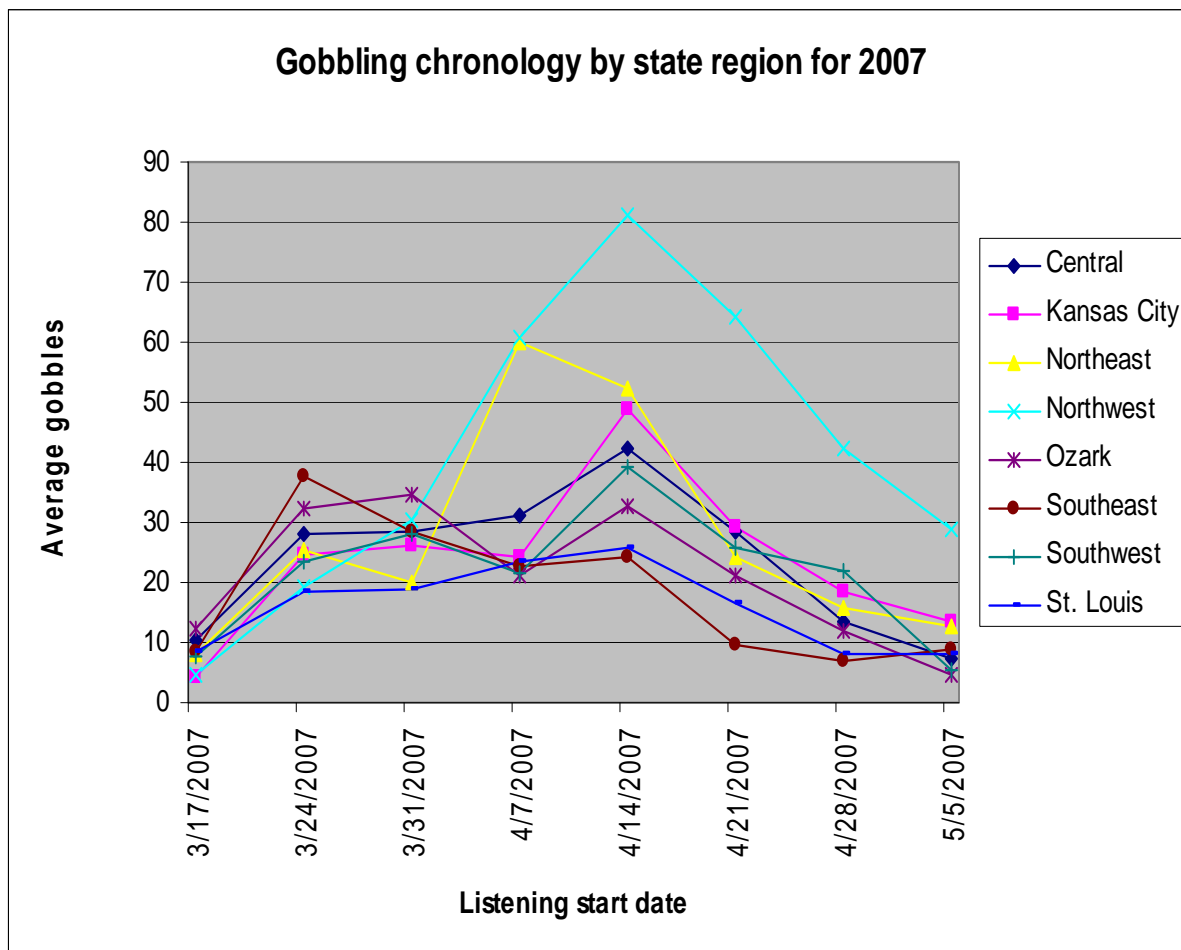


Figure 7. Gobbling chronology for turkeys by state region in Missouri, 2007.

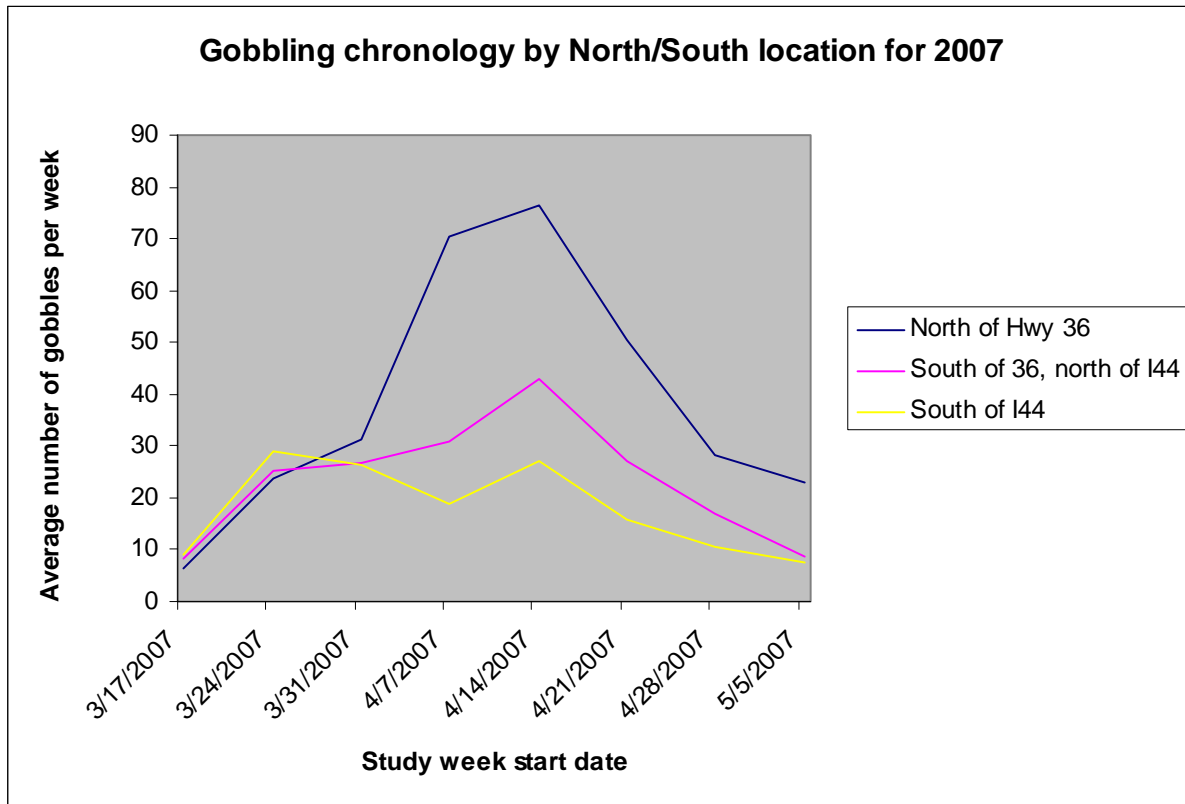


Figure 8. Gobbling chronology for turkeys in Northern, Central, and Southern Missouri during 2007.

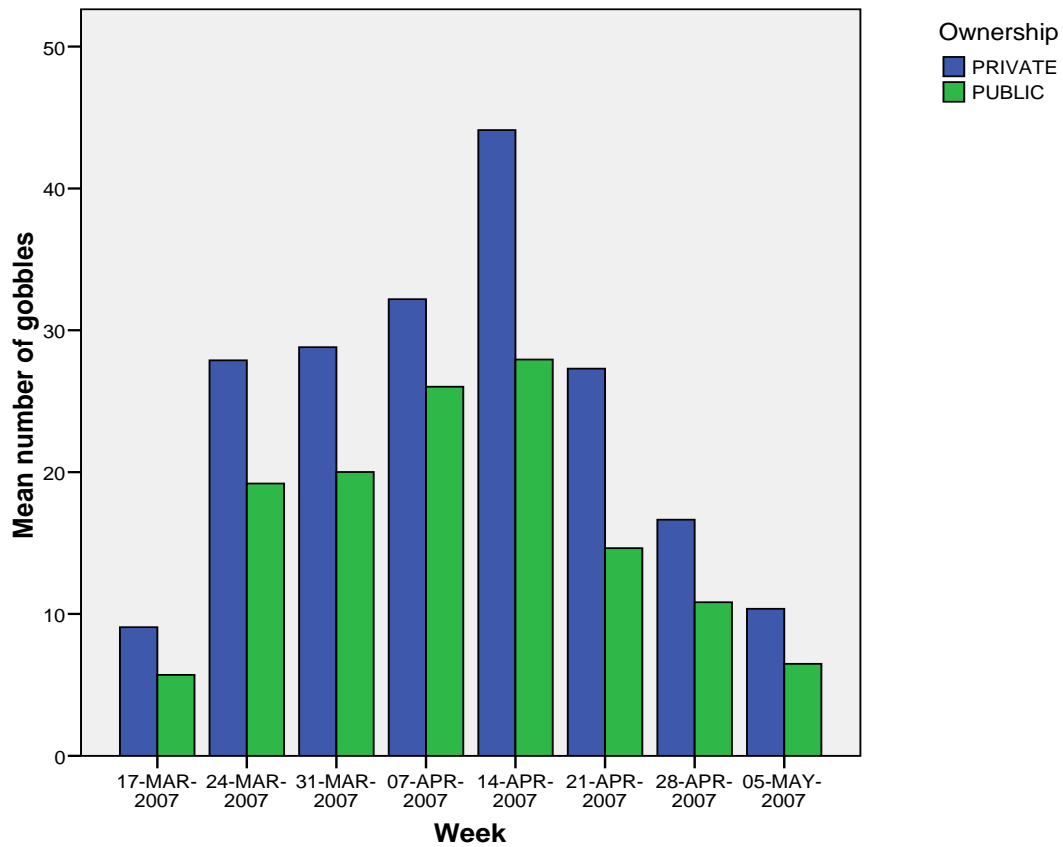


Figure 9. Gobbling rates by turkeys on public and private lands in Missouri during 2007.

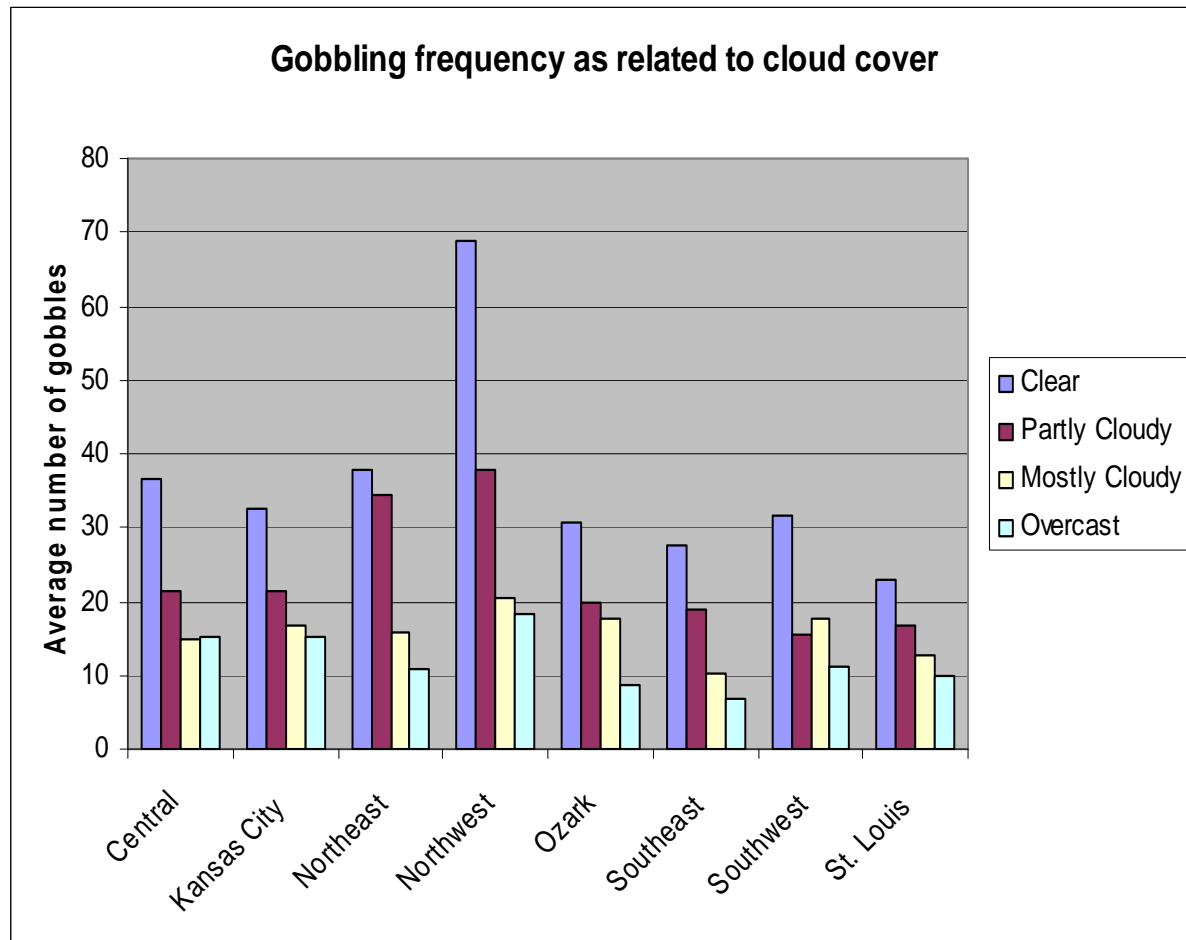


Figure 10. Gobbling frequency by turkeys in Missouri under clear, partly cloudy, mostly cloudy, and overcast conditions during 2007.

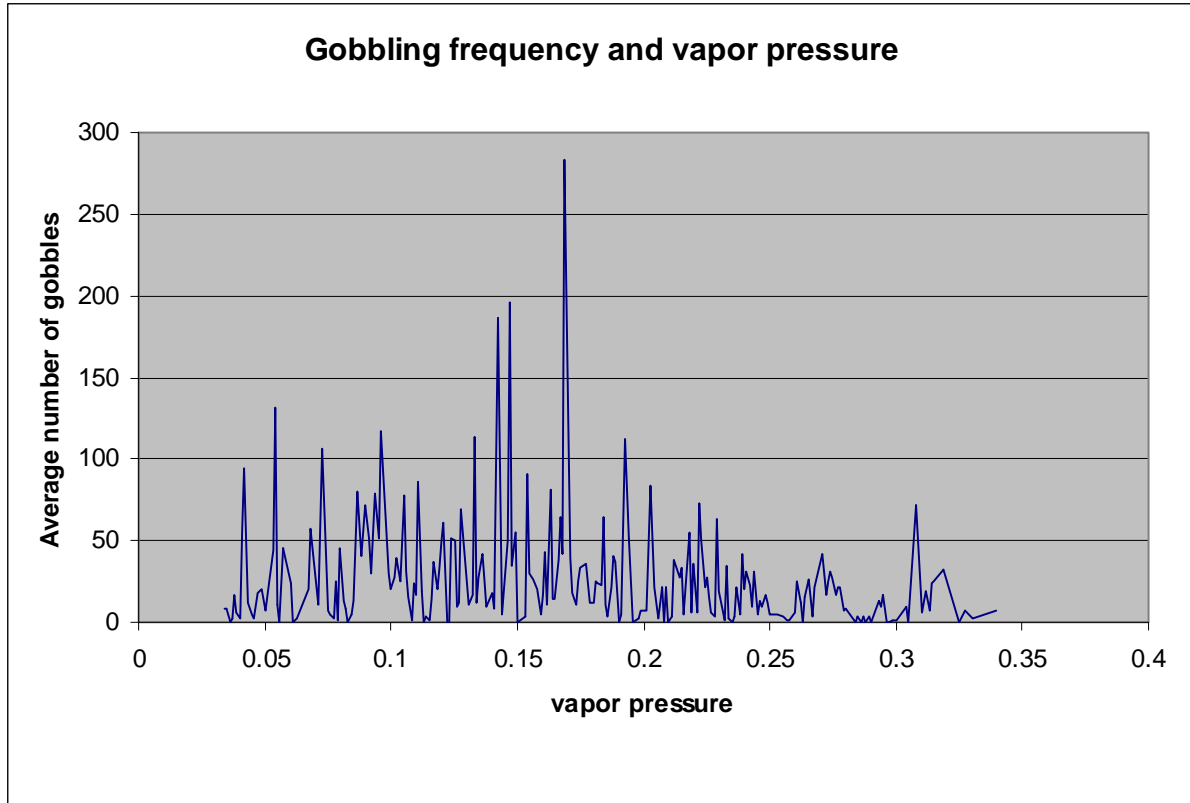


Figure 11. Gobbling frequency by turkeys in Missouri and vapor pressure during 2007.

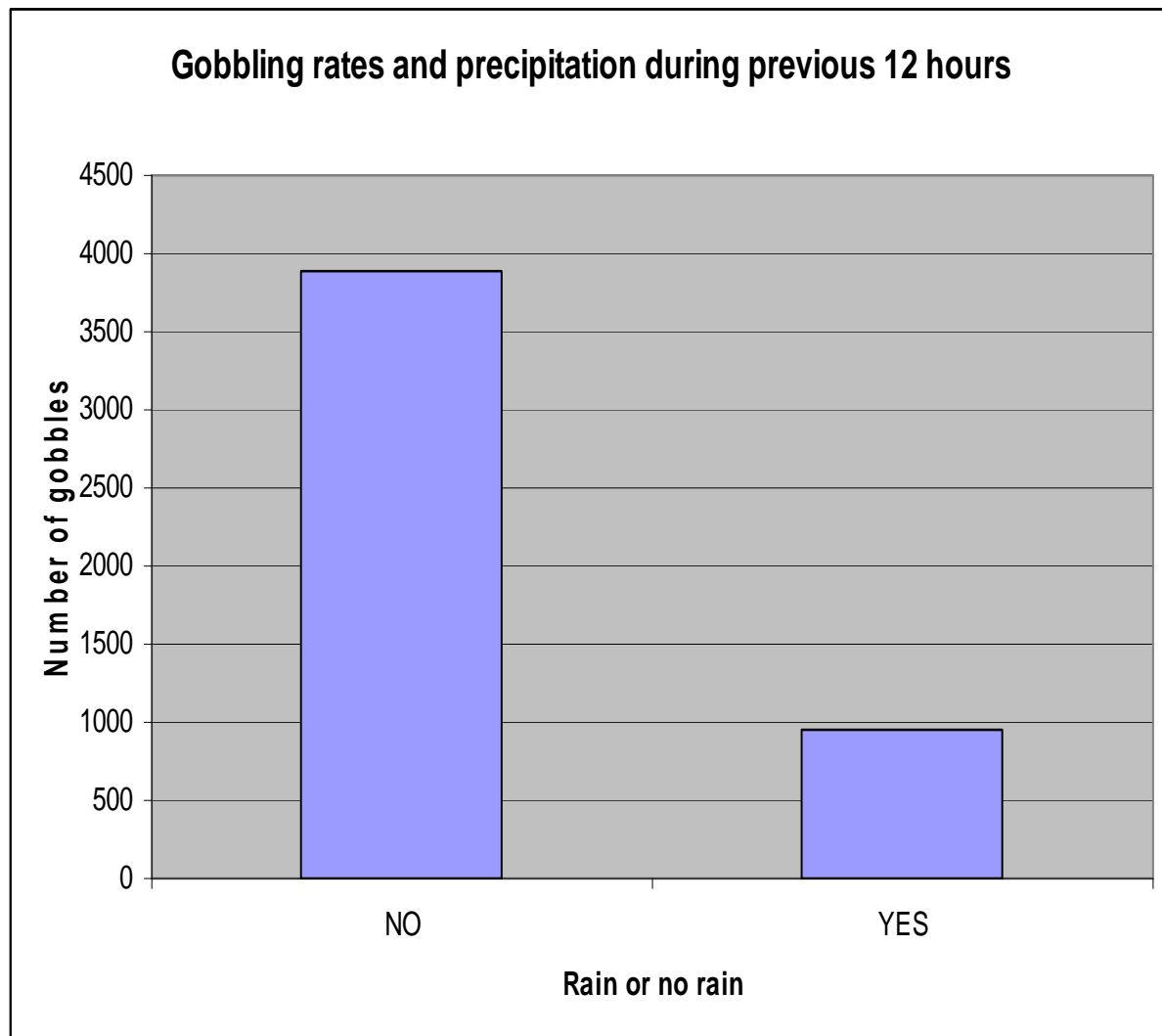


Figure 12. Gobbling rates on days without and with rain occurring during the previous 12 hours in Missouri during 2007.